

**ARCCOSH****PURPOSE**

Compute the hyperbolic arccosine for a variable or parameter.

**DESCRIPTION**

The hyperbolic arccosine is the number whose hyperbolic cosine is equal to the given value. The hyperbolic arccosine is defined as:

$$\operatorname{arccosh}(x) = \log(x + \sqrt{x^2 - 1}) \quad \text{for } x \geq 1 \quad \text{(EQ 7-101)}$$

Input values less than 1 generate an error message.

**SYNTAX**

LET <y2> = ARCCOSH(<y1>) <SUBSET/EXCEPT/FOR qualification>

where <y1> is a number, parameter, or variable;

<y2> is a variable or a parameter (depending on what <y1> is) where the computed hyperbolic arccosine value is stored; and where the <SUBSET/EXCEPT/FOR qualification> is optional.

**EXAMPLES**

LET A = ARCCOSH(2)

LET A = ARCCOSH(A1)

LET X2 = ARCCOSH(X1-4)

**DEFAULT**

None

**SYNONYMS**

None

**RELATED COMMANDS**

ARCCOS	=	Compute arccosine.
ARCCOT	=	Compute arccotangent.
ARCCOTH	=	Compute hyperbolic arccotangent.
ARCCSC	=	Compute arccosecant.
ARCCSCH	=	Compute hyperbolic arccosecant.
ARCSEC	=	Compute secant.
ARCSECH	=	Compute hyperbolic arcsecant.
ARCSIN	=	Compute arcsine.
ARCSINH	=	Compute hyperbolic arcsine.
ARCTAN	=	Compute arctangent.
ARCTANH	=	Compute hyperbolic arctangent.

**APPLICATIONS**

Trigonometry

**IMPLEMENTATION DATE**

Pre-1987

## PROGRAM

```
XILABEL COSH(Y)
YILABEL ARCCOSH(X)
TITLE ARCCOSH(X) FOR X = 1 TO 10
PLOT ARCCOSH(X) FOR X = 1 0.01 10
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